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Production and Preservation of Food Supplies

BY

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IT may be postulated that human living should be standardized in terms of human needs and rational aspirations, and that, through the aid of scientific knowledge, we are today enabled to supply means to this end Essentially, man's needs demand protection both against outer dangers, as wild beasts and climate, and against any lack of food demanded by the physiological requirements of his existence as an animal. As, however, his housing may be either a great mansion or the peasant's simple cottage, so man's food supply may be either as prodigal as a Lucullus feast of gourmets in a New York hotel at $25.00 a plate or a simple meal made up of the several elements of a food ration such as that in the recent tests made in physiological feeding of volunteers from the police force of that city.

Food Value and Relative Prices

While it would be absurd to propose, having obtained information regarding the number of calories, or heat units, of energy contained in the different kinds of food, together with the cost of such foods, that there should be laws passed requiring that each person should live strictly within the limits of such food requirements, yet an analysis of any table of food values, such as the following, from the standpoint of nutrition and the prices of the different foods therein, makes it plain that there is today really no relation between the two.

TABLE I.—PROTEIN, FAT, CARBOHYDRATES AND FUEL VALUE OF ONE DOLLAR'S WORTH OF EACH FOOD

	Price	Protein lbs.	Fat lbs.	Carbohydrates lbs.	Fuel Value Calories	Comparative values
Rolled oats............	$0.05 per lb.	2.5	1.36	14.3	36,950	100.
Fall wheat flour........	4.75 " cwt	2.	.20	16.0	34,307	92.8
Spring wheat flour......	5.00 " "	3.	.20	14.3	33,780	91.4
Corn meal.............	.05 " lb.	1.31	.25	16.26	33,735	91.3
Farinas...............	.05 " "	1.9	.20	15.6	33,394	90.4
Rolled oats (package)...	.25 for 4 lbs.	2.	1.09	11.5	29,560	80.
Sugar.................	8.00 per cwt..	......	......	12.5	23,250	62.9

TABLE NO. 1—*Continued*

	Price	Protein lbs.	Fat lbs.	Carbohydrates lbs.	Fuel value Calories	Comparative values
Rice	.07 per lb.	1.06	.05	11.3	23,210	62.8
Peas	.07 " "	3.	.19	9.0	23,121	62.6
Farinas (package)	.15 for 2 lbs.	1.26	.14	10.3	22,207	60.1
White bread	16 for 3 lbs.	1.58	.38	9.1	21,650	58.6
Buttermilk	.10 per gal.	3.	.50	4.8	17,362	47.
Skim milk	.10 " "	3.4	.30	5.1	17,070	46.2
Barley, pearl	.10 " lb.	.84	.10	7.8	16,492	44.6
Beans	.10 " "	1.95	.27	6.0	15,500	42.
Potatoes	2.25 " bag.	.87	.04	6.24	13,397	36.2
Malta Vita	.10 " 12 oz.	.74	.10	5.87	12,716	34.4
Toasted corn flakes	.10 " 12 "	.42	.11	6.06	12,517	34.
Grape Nuts	.15 " 17 "	.81	.07	5.56	12,143	33.
Milk	.08 " qt.	1.04	1.27	1.66	10,402	28.2
Shredded Wheat	.13 " 12 oz.	.66	.05	4.42	9,659	26.1
Beef, flank	.14 " lb.	1.21	1.36	....	7,970	21.6
Butter	.45 " "	......	1.88	....	7,933	21.5
Cheese	.30 " "	.93	1.22	1.4	7,138	19.3
Mutton chops	.24 " "	.56	1.20	....	6,106	16.5
Ham, smoked	.28 " "	.51	1.19	....	5,963	16.1
Beef, sirloin	.25 " "	.66	.65	....	4,000	10.8
" round steak	.24 " "	79	.53	....	3,718	10.6
Lamb, hind quarter	.27 " "	.61	.60	....	3,672	10.
Ham, smoked and cooked	.45 " "	.44	.50	....	2,930	8.
Salmon, canned	.25 " "	.78	.30	....	2,717	7.3
Salmon trout (fresh)	.15 " "	.61	.34	....	2,569	7.
Cod (salted)	.18 " "	1.05	.02	....	2,307	6.2
Eggs	.48 " doz.	.37	.29	....	1,912	5.2
Halibut (fresh)	.25 " lb.	.61	.18	....	1,894	5.1

The above table, taken from *Bulletin 245*, Department of Agriculture, Ontario, prepared by R. Harcourt, professor of chemistry, Ontario Agricultural College, Guelph, shows clearly the relations between the nutritive values of different foods and the cost of same. He states:—

"A study of the accompanying table shows that the foods derived from the cereal grains stand at the top of the list. This is not surprising, as they contain a large amount of carbohydrates, which are the cheapest fuel material among our foods. But it is worthy of note that they also furnish comparatively large quantities of protein and fat, much more than can be purchased for the same money in the form of meat, fish or eggs. Thus one dollar's worth of oatmeal at prevailing prices will contain two and a half pounds of protein. The same amount of money expended on a good spring wheat flour will furnish three pounds of protein; bread, a little over one and a half pounds; milk, over one pound; while sirloin steak will only supply two-thirds of a pound and eggs about one-third of a pound. Consequently the cereal foods not only stand first on the list in fuel value, but they also are capable of furnishing more protein for a given amount of money expended than can be procured in meat, fish or eggs. It is true that the protein of these latter foods is more easily and completely digested, but the foods from the cereal grains contain so much more of it that this could not possibly make up the difference, and, furthermore, these cereal foods contain an abundance of the cheap heat-producing carbohydrates to do the work of digestion. Among the foods placed on the table, buttermilk and skimmed milk are our cheapest source of protein, and they are probably as fully and as easily digested as the protein of meats."

Cereals the Cheapest Food

After pointing out that the cereals, as wheat, flour, cornmeal and oatmeal are much the cheapest foods and that whole flour or graham flour yields all the elements of nutrition, he quotes an authority for stating that the average man doing light work can get along very well on 120 grammes of protein, 50 of fat, and 500 of carbohydrates (starches) per diem, and gives the illustration of how 1.5 lbs. of rolled oats, 1 pint of whole milk, 2 pints of skim milk and 2 ounces of sugar do this at present prices for 12.5 cents per day. It will be noted, however, that the list contains no vegetables or fruits; while the need for such as a health requirement in winter climates, where so much animal food is used, has long been recognized, and condiments, as spices, which stimulate digestion, must not wholly be eliminated from the category of necessary foods. In a series of most valuable paragraphs in the same bulletin, by Miss M. U. Watson, director of home economics, reference is made to the wisdom of cultivating home-grown fruits and vegetables and also how to use milk, meat and fat economically.

FASHION IN FOODS

Advertising Sells Foreign Fruits

From the illustrations given it is abundantly plain that the question of the food supplies of the people must be judged from the many standpoints, which cannot be wholly determined by the question of nutritive values and prices. For instance, in 1914, it was estimated that the apple crop of Canada was approximately 20,000,000 bushels, yet the total amount exported was only 876,643 barrels and probably dried apples represented 100,000 barrels additional, leaving the remainder either to be consumed in Canada or to decay uncollected in the orchards. In spite of this fact, 350,907 barrels, worth $1,104,302.00, were imported during the same year, as also $11,018,505.00 of other fruits. Thus the element of fashion in tastes for food is developed quite readily both from an appeal to the palate and to social exigencies, these being further stimulated by clever business advertising. For instance, fifty years ago an orange to a Canadian boy was as precious as a silver coin, while it is but forty years since the banana appeared in the Canadian market. Twenty years ago California Christmas grapes were almost unknown in the east, while western American apples have been forced upon the Canadian market increasingly in recent years.

Preparation of Crude Food Products

The question of a national food production thus presents many aspects, not the least being the æsthetic factor and, equally, the application of scientific methods to the preparation of the crude products for general consumption. This may be illustrated by the fact that, up till forty years ago, the wheat supplied for consumption in Canada was a mixture of local spring and fall wheat, ground by stones in the local mill, the flour of which retained all the essential qualities of grain as food; but, with the introduction of the roller process and other machinery, our grain foods are supplied to the market in a dozen forms, as are illustrated in the previous table, and at prices wholly out of accord with their food values.

Federal Food Bureau Required

It is apparent from such examples that, in the interests of the people who have no knowledge of the nutritive values of food, a federal food bureau is required. The bureau would devote its time to the analysis, not only of the various natural foods in relation to their nutritive values, but also to educating the public, through popular literature, both as to the best methods of preparing our common foods, such as cereals, and as to what prepared foods offered for sale have a nutritive value closely in relation to their price. In nothing, for instance, could such a bureau do better than in educating the people with regard to the many forms in which candies and other confections are offered for sale.

Butter Fat Diverted to Ice Cream

The extent to which such foods are used by the people of Canada is difficult to arrive at exactly, but the following illustrations, taken from government reports relating to ice cream, are of interest. A publication just issued, containing the findings in a hearing by the Department of Agriculture at Washington on ice cream standards, illustrates the amount of cream diverted from whole milk in that country annually, stating that:

"If the average butter fat of 6 per cent to 8 per cent of the several hundred million gallons of ice cream produced and sold in 1916 were raised to 14 per cent (practically the standard adopted for

Canada) about 75,000,000 pounds of butter fat would be diverted from the butter market and injected into ice cream, with a corresponding increase to consumers of butter, and to the consumers of ice cream, who do not want additional calories (heat units) in a confection designed primarily to lessen the internal temperature of the consumer on a hot day."

As further illustrating this important matter, the *Report of the Dairy Commissioner* of the Department of Agriculture of Canada for 1913 may be quoted:

"Some figures relating to the ice cream trade were collected during the year. Returns were obtained from 60 ice cream manufacturers in 24 towns and cities. Of this number, all but 13 have been established since 1904, and they all report that their business is growing at the rate of 20 per cent to 25 per cent per year. The quantity of cream used for ice cream by the manufacturers from whom returns were received is equivalent to about 2,000,000 pounds of butter, and of course this does not take into account the large quantity used by the hundreds of smaller ice cream makers all over the country."

What Foods to Produce

From what has been shown in the above figures, it is quite evident that the primary problem of *what to produce* of the various kinds of foods plays an extremely important part in the relation of government advice and control in the matter of standardizing both the quantity and quality of the food supplies of the country. It is apparent that this problem should be quite as much a part of scientific supervision as is the education of producers as to what products will grow best in different climates and soils, as well as informing them with regard to the markets in different countries for certain products and the regulating of production in keeping with the demand. It is further evident that, until the present war, the general supply of different foods on the American continent had been usually so abundant and the ability of so many persons to buy what their fancy dictated had been so general that practically no scientific enquiries, beyond the mere academic ones of the chemist's laboratories, had been set in force to investigate such problems and arrive at scientific conclusions regarding them. But, today, with the ever-soaring prices of common foods, it is apparent that the expert scientific and business knowledge which can be brought to bear upon this problem would do more than anything else to assist the common people in establishing and maintaining what may be called a proper standard of living.

Efficiency of the Individual

The problem of the efficiency of the individual is so intimately associated with national efficiency that no labour can be too great to attempt to determine on what basis such efficiency rests and to bring to bear whatever forces are possible to secure it. This will be made evident when it is realized that the relation between the individual as a producer and consumer of his own food is an altogether different problem from what it was even fifty years ago. The following table showing distribution of population will illustrate this:

TABLE II.—DISTRIBUTION OF POPULATION

Population of United States			Population of Canada			
Year	Total	Urban	Year	Total	Urban	Per cent
1820	9,638,453	475,135	1832	772,980	Upper and Lower Canada	
1840	17,069,453	1,453,994	1841	....		
1870	38,558,371	9,071,875	1851	1,741,263		
1880	50,155,783	14,772,438	1861	2,507,657		
1900	75,994,575	30,797,185	1871	3,641,257	684,823	18.7
1910	91,972,206	42,623,383	1881	4,268,364	909,522	21.3
			1891	4,801,071	1,537,098	32.1
			1901	5,251,186	2,021,199	37.7
			1911	7,188,162	3,280,444	45.6

Such are the census figures for the total and urban populations in cities and towns in the United States and Canada of over 5,000; but it is apparent that the population engaged in agriculture is by no means the difference between these two. The United States Department of Agriculture, in its *Annual Report* of 1914, gives the following percentage of population engaged in agriculture in different years: 1820, 87 per cent; 1880, 44 per cent; 1890, 39 per cent; 1900, 35 per cent; 1910, 32.4 per cent.

The urbanization of England's population during a century and a half of industrialism is historic; but the following figures from Dawson's *Industrial Germany* show that the urbanization in that country has proceeded more rapidly during the period given in the table than even in the United States. Thus:—

Year	Total urban population		Rural communes	
1871	14,790,798	36.1 per cent	26,219,352	63.9 per cent
1900	30,633,075	54.3 " "	25,734,103	45.7 " "
1910	38,971,406	60.0 " "	25,954,587	40.0 " "

The increase in the large cities of Germany, that is, of the cities with 100,000 population or over, during the period is quite remarkable. In 1871, there were only 8 cities of 100,000 or over in all

Germany, but, in 1910, there were 48. In 1871, these cities held only 1,968,537 inhabitants, or 4.8 per cent of the whole population, whereas, in 1910, they held 13,823,348, or 23.3 per cent of the whole. In 1882, 48.5 per cent of the whole population actually depended upon agriculture, but, in 1910, this proportion was only 28.6 per cent. In 1882, only 35.5 per cent depended upon mining and manufacturing, while, in 1910, 48.8 per cent depended upon the same. In the needs of an over-developed industrialism many have seen the genesis of the war.

Movement of Population

As these several figures abundantly illustrate, for over half a century, a regular movement of population in the United States, Germany and Canada has gone on directly from country to city in an ever increasing momentum. Thus, during the census period, the population of the towns of over 5,000 inhabitants in the United States increased from 30,797,185 to 42,623,383 in 1910, while those of Canada grew from 2,021,799 to 3,280,444, and of Germany from 20,633,075 to 31,971,406.

INCREASED PRICES OF FOODS

As regards the production and price of foods, these figures make it abundantly plain that either the ability to produce on the part of the agriculturist must have increased during this period in these several countries in proportion to the relative urban increase, or that the supply of food must have become relatively less, and by so much the price will have either increased or the lack of products in any one country will have been supplied from other countries producing an excess of food aided by cheap transportation. That such increased production has not taken place, however, in Canada, is shown in the following remarks with regard to increase of production of various food products and the relative price of foods from the *Report of the Department of Labour for 1910:*

> "For some time past, and especially since the beginning of the present century, one of the most important features of the general economic situation in Canada has been a rapid and continuous advance in prices and the cost of living. The upward tendency seemed to have reached its highest point in 1907, when prices attained a level unprecedented in many years previously. The financial panic of the autumn of that year operated in arresting this tendency, and, in many departments, set in motion a recession which extended over 1908. The check, however, proved but temporary. The comparative slightness of its effect and the early recovery of the upward trend constituted, in fact, an especially noteworthy feature of the stringency in Canada. This became marked with the increasing industrial activity and trade prosperity of 1909, in the closing

months of which the high cost of living had become a subject of widespread discussion, affecting as it did the immediate personal well-being of nearly every one in the community, especially those of the wage-earning and other classes dependent on fixed incomes. Since the opening of the present year, public interest has been still more intense, a large number of the trade journals and daily newspapers of the country having published articles dealing with the question in greater or less detail, while a number of investigations of varying character into the nature and causes of the rise have been made by public and private initiative. At the present time it is safe to say no economic question equals in public interest that of the recent rise and the existing level of prices."

The following table, from Vol. II of the *Report of the Board of Enquiry on the Cost of Living*, issued in 1915, still further accentuates the increase in cost:

TREND OF WHOLESALE PRICES IN CANADA AND THE UNITED STATES, 1900–1913

CANADA

1900	1901	1902	1903	1904	1905	1906
100.0	100.8	101.9	102.8	103.6	107.8	110.8
1907	1908	1909	1910	1911	1912	1913
116.2	112.7	113.6	117.5	120.0	128.0	127.7

UNITED STATES

1900	1901	1902	1903	1904	1905	1906
100.0	99.1	103.9	103.3	102.8	104.5	110.8
1907	1908	1909	1910	1911	1912	1913
117.6	110.0	113.2	118.0	118.4	122.6	119.6

Note: 100 is adopted as unit or standard price.

Increase of Wages

Reverting to the question of standardization of living, it must be apparent, as a general deduction, that either the millions added to the city population in both the United States and Canada during the fifteen-year period 1900–1915 have, through their ability to earn increased wages, been enabled to pay for the increased price of food or that the standard of living must be inevitably decreased. That such wages have not increased in proportion and that the point of mere human subsistence has been approximated for millions of individuals in these cities is shown by the following diagram of wages, rent, price of food, etc.

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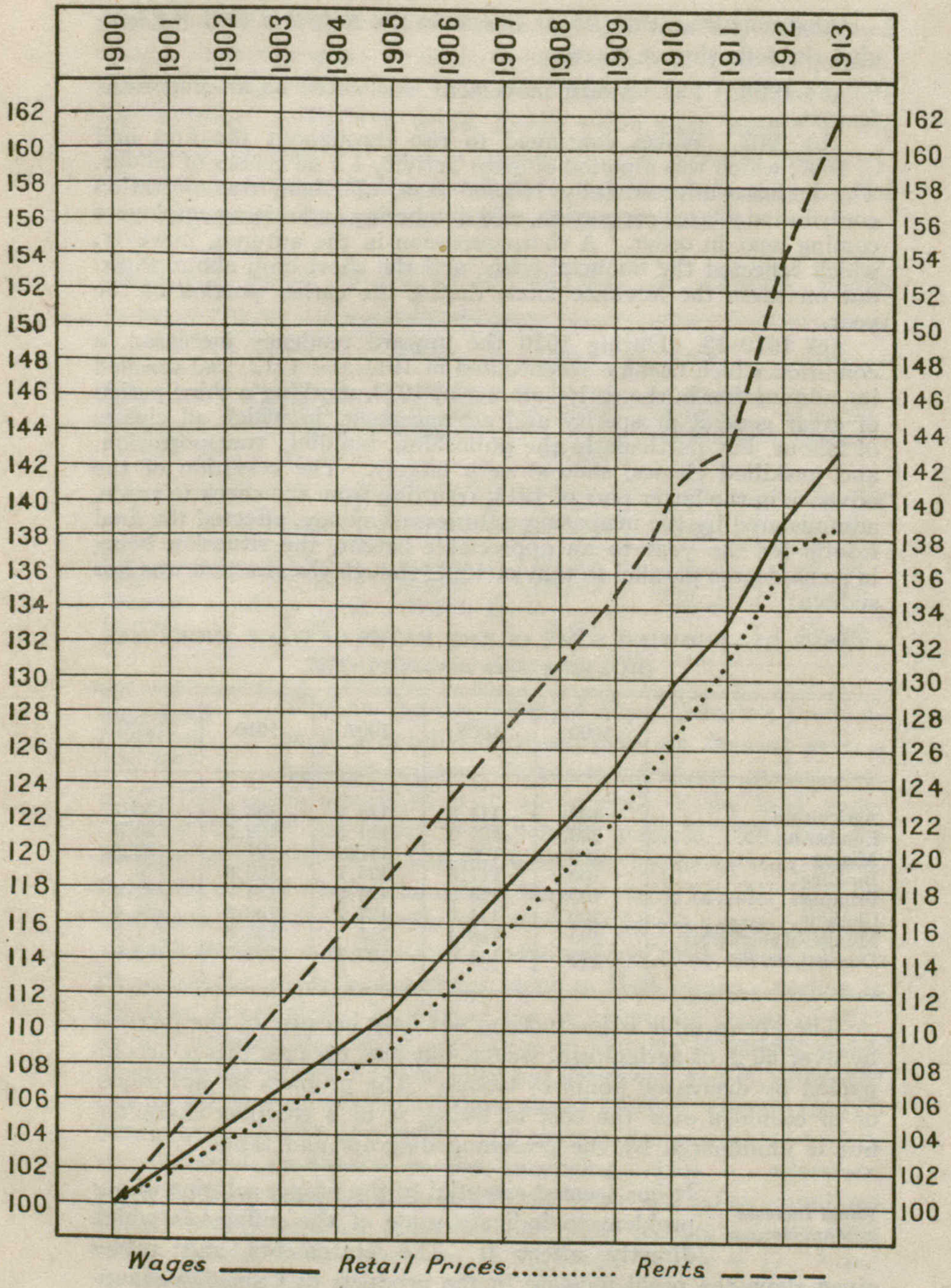

Abstracts from the *Labour Gazette* in the *Report of Cost of Living* give the following re wages:

(a) 1902. The upward movement was noted as an important feature.

(b) 1907. Wages continued to rise throughout the first half of 1907, which was a period of great activity for all classes of labour. The increase affected fully 100,000 men, of whom transportation contributed a large proportion, with lumbering and mining employees coming next in order. A sharp recession in the autumn, however, which reflected the financial crisis, and the short crop about wiped out on them the advance made during the earlier portion of the year.

(c) 1910–13. During 1910 the upward tendency increased, a condition which became accentuated in 1911 and 1912, and reached its culmination in the early summer of 1913, marking a third period of great general prosperity and advancement, in which all classes of labour, but particularly the publishing, building, transportation, and unskilled classes, showed very largely. The cessation of the advance in the latter part of 1913, resulting from the check to trade, administered by the increasing tightness of money, affected the final results for the year to an appreciable extent, the situation being in some degree parallel to that of 1907, though the reaction was less sudden.

TABLE III.—SHOWING SOME OF THE RATES OF WAGE INCREASES
(1900, being taken as standard = 100)

	1900	1905	1907	1910	1913
Agriculture	100	111.5	118.2	133.3	150.7
Lumbering	100	105.3	111.5	122.5	129.3
Mining	100	109	117.2	121	123.5
Building	100	117.5	125.7	136.8	150
Printing	100	113	121.7	134	152.4
Clothing	100	114.6	127.7	136.2	151.4
Municipal employees	100	110.4	115	125.6	141.4
Domestic service	100	111.6	127.3	129.7	142.9

The above table is instructive, not only because of the increase by over 50% of agricultural wages, but also because this is accompanied by decreased hours of labour. The problem of *real wages*, or of earnings over the cost of living, is of a complex character, but is illuminated by the preceding diagram and table.

Rapid Increase in Manufactures

It has seemed essential to the proper solution of our problem to indicate some of the influences which directly affect it. The statements and tables given show the rapid increase in the products of Canadian manufacturers in the period 1900–1910; and, in a country with potentialities of untold agricultural wealth, it might naturally be assumed that a similar progress would have been shown in its development. The following tables show, however, that a very different result has followed during the whole fifteen years past, except in the increased amount of cereals grown in the Prairie Provinces. Thus, in the census figures for Ontario, oats were the only crop of any importance that did not show a decrease in 1910.

PRINCIPAL FARM PRODUCTS OF ONTARIO IN CENSUS YEARS

	Wheat	Barley	Oats	Corn	Peas
1910	19,842,631	14,055,327	88,946,041	13,742,265	4,311,133
1900	28,418,907	16,087,862	88,138,974	24,463,694	11,351,646
Decrease	8,576,276	2,032,545	....	10,721,429	7,040,513
Increase	....	....	807,067	....	....

	Horses	Milch cows	Other cattle	Sheep	Swine
1910	811,585	1,032,979	1,471,694	747,483	1,864,165
1900	721,138	1,065,763	1,422,043	1,046,456	1,562,695
Decrease	....	32,784	....	302,973	....
Increase	90,447	....	49,651	....	301,469

Agricultural Production Stationary

Thus in the ten principal items Ontario's products show a notable decrease, only six showing even a nominal increase. What is significant is that such production seems associated with an increase in the land under crop by 478,638 acres over the 9,212,478 acres in 1901, but the lessened production is in keeping with the decline of rural population by 52,184 during the census period. In a broader way the stationary condition of production is shown in the tables on pages 150-153 showing the estimated products since 1910, where all the items, except horses and perhaps swine in 1914, show a decline in the total production. In view of the fact that the census of 1911 showed an absolute loss of population in Ontario of 52,194, which illustrates the situation in the other old provinces, and an estimated loss of the natural rural birth increase of 150,000, also of 120,000 immigrants, or 30% of 400,000, who came to Ontario in the period, this lessened production is not surprising. This is understood when such splendid counties as Huron, Bruce and Grey, populated almost wholly between 1840 and 1860 with settlers directly from Great Britain, showed decreases in the census decade of 17, 18 and 20 per cent, respectively, in addition to the loss of their natural increase.

Similarly, as shown in the *Pictou Social Survey* in Nova Scotia, the census showed a very marked trend of population to the urban centres; the rural population showing a decrease of 1,177, or 15.9 per cent, 411, or 13 per cent, being in Colchester and 766, or 17.4 per cent, being in Pictou, and the urban population an increase of 4,932, or 42.7 per cent. This report also states:—

> "The problems of the districts under consideration are neither those of an immigrant nor a tenant population, as in many parts of western Canada. With two exceptions all those interviewed were born in Nova Scotia, and a very large proportion of these in the counties in which they now reside. All the farmers interviewed were farm owners. Only four stated that in addition to their own land they rented areas ranging from 20 to 240 acres."

Movement of Population

Having made the situation plain it will be proper to investigate the underlying causes of the loss of population. Back of it all lies the movement of population made possible the world over through the invention of steam, and its use in transportation. Old Canada was well settled by 1860, her natural increase was 1.5 per cent per annum, and the lands occupied were utilized almost wholly for grain growing. The old east surplus populations, both in the United States and Canada, had begun the trek westward before the railroads; with them the movement was enormously intensified. Up to 1850 some 75 per cent of the total value of United States farm lands lay east and south of the Ohio valley, but by 1900, 51 per cent of the total agricultural products were from the twelve north central states, where the farms taken up between 1870 and 1900 increased from 1,125,078 to 2,196,567, just as in the Canadian Northwest the homestead entries increased from 2,384 in 1897 to 33,699 in 1912. The direct effect of the enormous increase, both by migration and by immigration to the American west, was the cheap production of enormous quantities of wheat and of cattle on the ranches, which so depressed the price of grain and cattle that the farms of the East, lessened already in their fertility, had to compete with wheat at 50 cents a bushel and cattle at 3 cents per lb., live weight. A part of the movement westward was owing directly to the employment given to many thousands of immigrants in building the railways, who were attracted by the cash payments for work, which gave them at once a good living wage instead of waiting for returns from the land. With this phenomenal movement of population, there grew up many urban centres along the trade routes; but, in addition to these, land speculators created thousands of boom towns, which reverted to their normal village condition so soon as the railway was completed. What the American west earlier experienced Canada repeated from 1902–13, and the rural conditions which have been so fully indicated followed, or were but a continuation of, what had gone on in the forty preceding years in Canada owing to contiguity with the United States.

Analyzed, it is apparent that the causes for this rural depopulation were primarily *economic*. If it be said that the farmers of the older provinces and states should have adopted more scientific methods and varied the kinds of crops grown, it can be answered that, owing to the customary mode of settlement on the large farms, grain-growing was the logical practice, as it implied a simple procedure and a product which did not depreciate and was a common medium of exchange of recognized value.

Economic Causes of Falling Off in Production

We have seen the outcome of the fifty years' movement of population in Canada, and may fairly assume that, with the last great west now more or less occupied, our attention will naturally revert to studying the factors in the reconstruction of the older settled provinces. The losses to the East in *man-power* have been enormous. Over 1,000,000 have been lost by Ontario to the United States alone since 1870, and the estimated movement from country to city in Canada for this same period is estimated at 1,600,000. The cost of rearing even such a population at $2,000 per person is $3,200,000,000, which the country may be said to have presented to the city. The process of further abstracting capital goes on to-day, not only in *man-power* but also in money capital, since the various chartered banks are systematically transferring their rural deposits to city commercial centres to be used in large enterprises, scarcely one of which has to do with the development of agriculture and the increase of production. The process is, moreover, injurious, to the extent that it tends to a high rate of interest and to short loans to farmers for permanent improvements.

Depleted Rural Homes

This loss of boys from the farm means not only the loss of their labour but, further, the removal of their share of any inherited patrimony from the country to the city; while the artizans, once located in small hamlets, have gone to larger centres, village business lessens with the growth of the mail order system. As a careful rural observer states:

"My home township of Edwardsburg lost 14 per cent of its farm homes in the decade 1909-1910, and this is neither exceptional nor extreme. But the abandoned dwelling is a lesser evil than the depleted household. In 1901 the average number of persons to the household throughout Canada was 5.16. In my home county of Grenville, typical of rural life, it was then 4.42. By 1911, the average for Canada had fallen to 4.84. But in Grenville it had fallen to 4.07. Nor is this exceptional nor extreme. Middlesex North had but 3.8, Prince Edward 3.8, Norfolk 3.7. Yet Toronto has 5 to the household, Halifax and Winnipeg 5.3, Montreal 5.4. The low average for the country is not race suicide—it is class suicide. There are not, to any serious extent, childless homes; they are homes whose children have gone. Were the children born in any community 15 per cent less in number than the parents—for that is what 3.7 is equivalent to—that community would be doomed. But is it well where, in a community of over 20,000 persons, such as normal Norfolk, the children remaining in the community are 15 per cent less than the parents? Is not the class doomed?

As this student of the situation so acutely remarks:[*]

"The school suffers. In my home township there is a school with but a single pupil on the roll. Last year the school was not opened, the trustees paying $300 to have the solitary pupil conveyed daily to the next district school and taught there. Yet fifty years ago that school had an attendance of 45.

Social life suffers. This loss is from the beginning of life and throughout its course and in all its elements."

As bearing upon the economic problem, the following, relating to the earnings of manufacturing establishments, is of extreme importance:[†]

Year	Capital value of plants	Number of employees	Wages	Value of raw and partly manufactured articles	Value of products
1900	$ 446,916,487	339,173	$113,249,350	$266,527,858	$ 481,053,375
1905	846,585,023	392,530	165,100,011	....	718,352,603
1910	1,247,583,609	515,203	241,008,418	601,509,018	1,165,975,730

"According to the above table the average earnings in manufacturing establishments advanced from $333 in 1900 to $420 in 1905 and to $467 in 1910, a rise in the decade of 40 per cent. Proportionately, however, to the value of the finished product the wages bill had been decreasing. In 1900, it was 23.5 per cent, in 1905, 22.9 per cent, and, in 1910, only 20.6 per cent. The similar ratio of raw materials to the finished product also has declined from 55.4 per cent in 1900, to 51.6 per cent in 1910."[†]

It is further pointed out that the profits in proportion to the amount of capital invested and cost of production steadily increased, in spite of the cost of labour from 21.1 per cent in 1900, to 27.4 per cent in 1910. This may be roughly illustrated by the following table abstracted from the *Canada Year Book*, 1914:

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[*] "The Rural Problem," by Rev. John MacDougall, B.A. *Report of Social Service Congress*, Ottawa, 1914.

[†] From the *Report on Cost of Living*.

COMPARATIVE TABLE OF VALUES IN THREE LEADING INDUSTRIES

	Agriculture	Manufactures	Railways
Total value of farm property and of capital in manufactures and railways....	$4,231,840,636	$446,916,487	$1,808,829,761
Total values of farm products, gross earnings of manufactures and of railways..................	(Cereals, etc.) 638,580,300 (Stock) 525,530,191	1,165,975,639	243,083,539
Profits after deducting operating costs	286,586,916	323,458,205	65,108,280
Profits.............	6.7 per cent	27 per cent	35 per cent
Total employees..........	1,000,000	515,203	159,142
Average salaries..........	286.00	241,008,416 437.00	111,762,972 702.00

Small Returns from Agriculture

Probably the actual situation has nowhere been better illustrated than the following statement, made in February, 1917, by M. Cummings, B.A., B.S.A., Principal, Nova Scotia College of Agriculture:

"I interviewed six farmers, selected out of an audience of one hundred, with a view of getting information, first, as to the usual annual returns from their farms, and, second, as to whether they are making more money this year than last year. These men were speaking not only for themselves, but for the communities with which they were familiar. First, I asked them what they thought was the net labour income of the average farmer in their community. This was defined as the balance of receipts for a year, after running expenses of the farm and interest on their investment had been paid. To make this point a little clearer, I may say that the farmer would have a certain amount of his living from the farm, such as his potatoes, milk and a certain percentage of his beef, etc. Nevertheless with his net labour income he has to buy his other household commodities, such as tea, sugar, flour, etc., clothes, and also pay for incidental doctor bills, charities and farm improvements.

"Averaging the statements received from all of these men, the figures indicated that the average net labour income of the average farmer in the communities represented was rather less than $300 per year. However, as the average farmer has never paid for the investment in his land, he usually has the interest on this investment to the good. In the case of the ordinary 100 to 150 acre farm in Nova Scotia this would mean from $150 to $200 per year.

"One of the farmers interviewed, who keeps books very carefully said that he himself, as a large strawberry and fruit grower, had a net income from the past year of over $1,000, but he knew of neighbouring farmers whose net labour income was not more than the interest on the value of the property—in other words, nil."

This is supplemented by a statement supplied by a prominent dairyman of the district through the kindness of Dr. J. B. Hollingsworth, V.S., Inspector of Food, Ottawa:

Value of farm property (140 acres)	$15,000.00
" 30 head milch cows	
" 6 horses	
" farm machinery and buildings	
Int. on $15,000 at 4 per cent	$600.00
Feed purchased for year	790.00
Taxes and insurance	100.00
Expenses of house ($100 per month)	1,200.00
Wages to 1 man ($30.00 per month)	360.00
Blacksmithing and general repairs	100.00
Toll	15.00
Saturday expenses in city (delivering milk)	50.00
	$3,215.00
Cash receipts from sale of milk	3,400.00
" " " " " calves	100.00
	3,500.00
	3,215.00
Wages for myself, wife and 3 children (for year 1916)	285.00

Note:—No estimate is made for rent or depreciation of premises.

Aids to Increased Production

It is estimated that there are 935,000,000 acres of arable lands in the United States, but that only 400,000,000 are in farms and improved, the balance being unimproved; further, that but 40 per cent of the land is reasonably well cultivated, and less than 12 per cent is yielding fairly full returns. In Canada, the proportion of unimproved land is very much greater, while there is no evidence to show that any more effective cultivation exists here than there. To the end of improved cultivation increased labour is essential. Especially is this true in war time; but the table of wages already given shows that agricultural labour had already risen in 1913 by over 50 per cent of what it was in 1900, and is yet higher to-day. It is evident that, apart from home-grown labour resident on the farm, its price will be regulated by the price in the neighbouring city for a nine-hour wage. So extreme is the situation in fact that, according to the *Pictou Survey*, eighty-two per cent of the farmers considered it difficult to get suitable hired help. During the last decade, the cost of farm labour has increased 38 per cent. This increase many farmers consider has rendered farm help prohibitive. Less than 3 per cent of the farmers employ female help.

Ontario Farmers Leave Farms

The indirect effects of this lack of labour are seen in some of the oldest and most highly cultivated areas of Ontario, within from thirty to eighty miles of Toronto. The writer knows of many instances where farmers, within six to ten miles of lake Ontario, have rented their farms at nominal prices to neighbours for pasturage, and have gone to the villages along the front or to the cities, giving as the reason that, with lack of capital, the distances from town markets, and the high price of labour, owners could not continue operating their farms profitably. In vain had they offered their farms for sale at low values; now they seem content to live in a small way, cultivating a garden and working at casual work in the village or on adjacent farms, demanding the wages fixed by town usage and by the hours of organized labour.

But, if rural labour has so decreased, it might be assumed that the lack would be made up through the increased use of machinery. While in this direction may be found a partial solution, in practice it is found that the cost of sufficient machinery, with its period of use limited to the harvest time, is often too great for the returns secured from it, unless there is adequate farm help. This difficulty is, nevertheless, being here and there met by neighbours combining their working force. To these difficulties are added the facts of insufficient capital to make cash purchases and the difficulty of obtaining loans at low rates. Such rates in progressive agricultural countries in Europe range from 3 per cent to 4 per cent on long terms.* The use of cheap money is likewise needed for purchasing at best prices good seed and fertilizers. Of course, to these difficulties are too often added the even greater one of a lack of business and scientific knowledge on the part of the farmer as to the economic value of the permanent employment of farm labour and of buying fertilizers. If uncertain as to results, he will err on the side of safety and not invest his money in these things.

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* That serious efforts are being made in Canada to cope with the problem of limited capital is seen in the passing of

(a) The Farmers Credit Act, Saskatchewan, 1914 and 1917.

(b) An Act making Provision for Agricultural Credits, British Columbia (1915)

(c) An Act for creating Farm Settlements and Advancing Loans, New Brunswick (1916). Also various schemes in other provinces for assisting settlers on the land by loans.

Advantages of Co-operation

But if, as has been shown, the farmer as an individual labours at a great disadvantage, there is the possibility of his co-operating with his fellows of the community. Thus, they may, as has been worked out in most European countries, concern themselves with obtaining adequate and cheap money for development, for purchasing seeds, fertilizers, etc., in car lots at best rates, with the co-operative use of help and machinery, with the co-operative collecting, conserving and preparing products for markets, and with selling in wholesale quantities and directly to large distributing houses or even to individuals. What this development may become in less than twenty years has been seen in Denmark, a country of less population than Ontario, which, in 1906, had 1,076 co-operative societies, with 157,537 members, who did $450,000,000 worth of business. Sir Horace Plunkett, who has done so much to assist Irish agriculture, summed up the problem in "Better farming, better business and better living." As has been so well pointed out in the Saskatchewan *Report of the Agricultural Credits Commission* (1913):

"Whether or not the farmer has become a good business man, agriculture has become a business and business requires capital. This may be in either of two forms, money or credit. Whatever be its form, the farmer who will succeed to-day must have constant access to capital. The farm is ill-suited to provide a constant supply of ready money. Crops are harvested but once each year . . . He should not be compelled to repay at a time when it is not profitable to dispose of his produce or stock. It is most important to note that the turnover of capital in one crop a year on the farm is different to that in commerce, where the turnover is several times a year. The farmer should be given all reasonable opportunity to borrow at moderate rates for those numberless improvements which are certain to repay their cost and better his economic position. In Europe, it has been recognized that co-operative buying, producing, marketing, borrowing or credit are vitally inter-related." Summed up, the advantages of co-operation are:—

(a) Co-operative purchasing of agricultural requirements and the co-operative sale of produce through the bulking and regularizing of consignments for cheap and prompt marketing.

(b) The purchase of farming implements necessary to this end with co-operation in their use.

(c) The purchase of pure seed, fertilizers, etc., through co-operation.

Failure of Existing Conditions

If, then, we have seen the failure, economically, of existing rural conditions in the older provinces, and agree that co-operation becomes an essential element in improving conditions, it becomes apparent that, to obtain more favourable results in these various directions, radical changes must be made. What has been said prepares us for the adoption of methods, which have already proved most profitable in more highly developed countries elsewhere. In Sweden, for instance, "the limit of land value for any single proprietor is $20,000, while 270,000 parcels constitute two-thirds of the whole land, and 85 per cent of these are worked by the proprietors. In Denmark, 95 per cent of 250,083 holdings, in 1910, with a rural population of 1,700,000, were under 135 acres, and formed 70 per cent of the total acreage. In 1881, the total exports of butter, bacon and eggs were valued at $11,500,000 and, in 1910, at $91,500,000. In Ontario the total occupiers of farm lands decreased from 285,608 in 1891 to 220,801, in 1911, or 22 per cent, and the total owners by 16 per cent. In contrast, the population of the whole province increased from 1901 to 1911 by 340,327, but the total increase in the area of field crops for the same period was only 1.1 per cent. The increase in the value of farm lands for this period was 14 per cent. In Illinois the number of farms cultivated by tenants was 41 per cent in 1910; less land was cultivated than in 1900, and less products secured, yet farm land values increased in price by 96 per cent and half the counties showed a decrease in population at the end of the decade. Similarly, the aggregate population of Illinois, in towns over 2,500 population, was 63.2 per cent of the total, Chicago having 40 per cent of the whole state."

Education must go Direct to Farmers

But, when more favourable conditions along these various lines have been followed, there still remains the personal educational factor to be dealt with if better results are to be obtained. A provincial officer of the largest agricultural college in Canada has stated that farmers who have gone past his institution for a lifetime will, in many cases, still be found farming after the methods of their fathers of forty years ago; while one of the most experienced city food inspectors in Canada, after illustrating the backward conditions in portions of the rural districts under his charge, expresses the positive conviction that progress will be very slow until the friendly assistance of official experts, experienced farmers or rural demonstrators actually brings such matters as that of the improved dairy cow, the spraying of fruit trees or of selecting seed, directly to the farmer in his own home or to a local group of farmers, and, by actual results, show them a better way. For the dairyman, with cows producing only 3,000 pounds of milk per annum, to be shown by illustration that his herd, through selection, may, in a few years, be producing 10,000 lbs. per cow per annum for the same labour, is like experiencing light shining in a dark place. Forty years personal observation of Ontario conditions convinces me that this experienced instructor is absolutely correct.

IMPROVED TRANSPORTATION AS AN AID TO PRODUCTION

When freight congestion is so acute that the people in every city in Canada are crying out for enough coal to keep them warm, it is difficult to even suggest improvements in transportation for farm products as a factor in our problem. It involves not only the problem of the regular movement of farm products, the careful handling and quick delivery of perishable products, but also a rate sufficiently low to make the returns to the farmer for his product reasonably adequate. As an illustration, the commission appointed by the Saskatchewan Government to study the grain market (1912) reached the conclusion that the cost of producing a bushel of wheat averaged 55 cents and that to meet the cost of haulage, elevator charges, railway and steamboat rates, the farmer must receive $1.00 per bushel before wheat growing could pay adequately.

Variations in Freight Rates

An instance known to the writer occurred where a commission merchant of St. John, N.B., agreed to ship potatoes at 75c. a bag to a station near Toronto, the freight per carload being 23 cents per hundred pounds; for the same quality of potatoes bought at Ottawa for 80 cents a bag the freight charged to the same point was 36 cents per hundred pounds, while corn and peas per hundred in the same car cost only 16 cents per hundred, the whole making a part carload. Again, pears carefully packed in baskets, shipped on a night train, and arriving in Ottawa from a distance of 150 miles in perfect condition, cost so much for express that the sender got no return for his pears or labour after the express, commission and cost of baskets had been paid. These simple illustrations indicate that, no matter in what the fault lies, the effect of high freight rates has been one of the most discouraging factors in the solution of our problem. The illustration given of where the cost of potatoes was 36 cents per hundred, while that of grain was 16 cents, would seem to indicate something radically wrong with the basis of freight classification, apart from the larger question of excessive rates. Why potatoes, a crude form of starch, containing 83 per cent of water, should cost more than twice as much to be carried in bags, in comparison with corn, containing almost three times the food substance, passes comprehension; but it will serve to illustrate the fact that many kinds of products could be grown in great quantities and most profitably in Canada if the problem of transportation were solved. The Railway Commission, in dealing with many problems, has constantly to meet the matter of over-capitalization and the interests of bondholders.

Earnings of Railway Employees and Agriculturists

In 1914, the gross earnings of the railways were $243,083,539 and the working expenses $178,975,259, or a ratio of expenses to earnings of 73.63 to 100, while the total employees were 159,142, with $1,527 average earnings. The total value of the field crops in 1914 was $638,589,300, earned by 933,735 farmers, representing one-half the population of Canada, who, with the assistance of their families, earned about $683 per capita. With these facts confronting us we may justly question whether some other standard should not be possible when the total earnings stand at 1 to 2.8 while the workers stand 1 to 5.8. It would seem, therefore, that a branch of national work such as the railways, assisted to 1914, by loans to the extent of $233,914,836, might direct some portion of these earnings to the betterment of agricultural production, which comes back so directly in the increased tonnage to be hauled, with a proportionately larger profit. Whether or not this can only be reached by the nationalizing of the railways may be open to discussion, but that agriculture should be assisted by a better regulation of traffic rates does not seem to admit of question.

BETTER QUALITY AND IMPROVED METHODS OF CONSERVING PRODUCTS

The distinction must clearly be recognized, not only between the several kinds of farming but, also, between the old time grain and cattle farming and modern agriculture as an industry. The remains of great wharves may still be seen in San Francisco bay, Cal., where many millions of bushels of wheat once were stored, waiting for the clipper ships that transported it to Europe *via* cape Horn. These great crops of wheat have fallen off and a new phase of farming, of a scientific and intensive character, is gradually being introduced. Rural population increased more rapidly in California during the last census period than in any other agricultural State; and, to-day, the development of the citrus fruit industry is proceeding along the lines of scientific production and co-operative sale more rapidly than is agriculture in any part of the United States. On the other hand, the census of 1911 showed fewer apple trees in Ontario than in 1901, and investigation shows that, while the cost of transportation to European markets has increased, as also that of picking and packing, the glut in the market in the autumn, due to the necessity of the early shipping, under existing methods, of so perishable a product, has made sales of one-third of the whole shipments unprofitable in Liverpool, owing to damaged fruit. The pre-cooling of small fruits, such as southern strawberries, at the time of harvesting, and a similar treatment of oranges and other citrus fruits has resulted in the building up of a trade in the United States of $150,000,000 annually.

Losses through Careless Handling

An estimate was made in a Montreal packing house that when received, 20 per cent of the eggs were unfit for packing and the loss in this product alone in the United States in 1914 was estimated by the Department of Agriculture at $50,000,000; while, during the present season, thousands of bushels of potatoes have been destroyed through carelessness in storage on trains and in permitting freezing in transit. One of the causes for the decline in cheese production in Ontario is neglect to store ice at the local factories so that its maturing at a temperature of 50° F. can proceed normally during the hot weather; while many thousands of pounds of milk are thrown away at the factories as unfit for cheesemaking because the farmers had not put up ice for cooling purposes. The Department of Agriculture at Washington, through years of practical work, has demonstrated that the summer trade in poultry for the great city markets may be readily developed when the birds are dressed and at once frozen, placed in cold storage, and shipped in refrigerator cars. Sugar beets may be stored at 32° F. for months, thereby lessening the number of factory labourers and extending the working months. Refrigeration maintains butter in perfectly good condition for months at zero temperature; but, at present, the profits for summer butter so stored accrue largely to the city warehouseman—a single warehouse in New York, in 1916, had 234,223 tubs of butter and 101,789 boxes of cheese stored.

Evaporation to Preserve Food

The prevention of waste not only through the decay of foods, but also by lessening its bulk and thereby the cost of transportation, is not only possible through one of the oldest, but also one of the most recently developed methods, that of drying fresh products. Apples weigh 54 pounds per bushel, but can be preserved for months and years if the bulk is reduced to 7 pounds through drying to 20 per cent of moisture, while the cheapest fruits generally available many years ago were dried currants, raisins, prunes, and apricots, all from foreign countries. From these examples, we realize how great is the need and opportunity for adopting better methods in Canada for conserving food. Probably in nothing are our crude methods more evident than in the carrying of crude starch in that commonest of foods, potatoes, having 83 per cent of water, whereas we import other starches, represented by corn, rice, tapioca, etc., at a price made possible because of the small amount of water present. Drying potatoes will prove the first step in the regulation of the price. Evaporation is being used to prepare condensed and desiccated milk, both of which, properly carried out, have much to recommend them, both as regards the cost of transportation and of preservation.

Though there is but little inspection of the quality of the raw produce used and none as to the percentage of water in the product, we see the canning method of preserving food constantly increasing through its convenience and the business methods employed, notwithstanding it implies a costly package, occupying much space in the storeroom and in the car, where the cost is high in proportion to the bulk, mostly of water carried.

Canning Costs Largely Increase Sale Prices

In 1911, the capital invested in Canada in evaporated fruit and vegetable factories was only $510,065, utilizing materials worth $171,593, and giving products worth $448,929, while in the canneries the capital invested was $5,512,474, the raw materials costing $2,295,303, and the products valued at $5,971,082.

The processes by which raw foods can be condensed or compressed while retaining their essential nutritive values, are being rapidly developed in many centres of investigation and, if the degree of heat utilized is such that no vital principle of the food is lost, it is certain that an element of cost, both of handling and transportation, could be greatly reduced. As another illustration, Western elevators have hitherto received in storage uncleaned wheat, on which farmers paid from ten to fifteen cents per hundred as freight to Fort William; there it was cleaned, reducing its bulk by fifteen per cent of the refuse on which freight had been paid. This waste material was shipped to Chicago and sold at from $20 to $25 per ton as feed for hogs, poultry, etc. By cleaning the grain locally this 15 per cent on which freight is paid could be saved, the grain standard proportionately improved and its value increased; while the waste would be kept for feeding at home.

Knowledge of Soil Productivity

Equally important with these methods of conserving and marketing is that of more extended and improved knowledge of the elements of soil productivity. Most important advances have been made towards increased production, through the knowledge that legumes of all species have the property, not only of utilizing nitrogen from the air for growth but, further, of increasing, through their deep roots, its storage in the soil. Chemists are further pointing out the tremendous importance of the best methods for utilizing farm manure, especially by preventing the loss of its constituents into the air. It has been estimated that the loss to the farmers of Indiana through the waste of manure is $15,000,000 annually. Fortunately, through experiment, it has been found easily possible, by treating such manures with calcium cyanide and acid calcium phosphate, to prevent such losses and at the same time prevent, through the propagation of flies, these manures from becoming a menace to health. Rock phosphates also, through admixture with manure and other organic compounds, will not only help to fix the nitrogen therein but also that the insoluble phosphates, if applied and mixed therewith, become gradually soluble and directly available as a plant food.

Care Required in Packing Fruits

The refinement of methods in producing more and better orchard fruits, free from blemish, is an elementary condition of successful fruit growing; but the selection of a better type of package, with more careful picking and sorting, is becoming increasingly necessary to compete in the British and still more in the western Canadian markets. As yet no serious export of Canadian fruits to the United States has taken place, though, for a month, a market for northern strawberries and raspberries is possible there, after the fruits of the southern and central states are over. These fruits, grown close to the north shores of the Great lakes, are delayed in ripening even so long as the end of July.

If these numerous illustrations show what lies at the basis of increased production and wider markets with better prices, then everyone who has studied the problem or is interested in it will naturally ask himself how these desired ends can be effected. The things requiring to be done have been abundantly illustrated in this paper; but the problem of the methods to be adopted remains as yet largely unsolved in Canada. Nowhere are the methods required being better illustrated at present than in Great Britain. There for fifty years the *man-power* engaged in agriculture has remained practically stationary; and, while organization is seen everywhere in the great branches of commercial business, this basic industry has been left largely to care for itself. So far as organizing the forces for effective work is concerned the same may be said of the situation as it has existed in Canada.

Grain Growers Organizing

Within recent years the grain-growers of the West have seen clearly what they want and required and are organizing to that end; but the intimate relation between city business and rural development remains in practice largely unrecognized. Many millions of capital have, within a few years, been devoted to doubtful mining enterprises and untold millions have been invested in vacant lands, in the hope of getting someone else to increase the value by cultivation, so that owners might obtain the unearned increment; but, as the figures already given show, actual investment by capitalists in agriculture in the East, to be pursued as an industry, has had but few illustrations. Thus almost nowhere have we seen capital invested in cold storage at rural points of production in the 333 miles between Toronto and Montreal, yet, if such existed, the fresh products could be at once stored in perfect condition. Indeed, few instances of intensive cultivation exist except where we see imported Belgians or Hollanders cultivating beet-roots and onions; while few co-operative associations are in existence to carry out the desirable methods already indicated.

Co-operation Must be Scientific and Practical

To the answer that such methods cannot be forced, we have only to turn to what war conditions have brought elsewhere. In France, in the beginning of 1916, the Government decreed that each rural commune should appoint a committee of farmers and that each canton should have its superior committee for organizing agriculture for increased production. It was recommended in the decree that action should be taken within a fortnight and enjoined all interested persons to co-operate. Nowhere does better machinery exist than in the municipal sub-divisions of most of the provinces of Canada for similar action, and, under the present demands of war time, such ought similarly to be taken. But, such action must be scientific and practical, since we see that, in Ontario, cheese factories, where the patrons have for years combined for production, the loose methods too often allowed resulted in a lack of real progress and good business results. Just as a census of the man-power of our communities for recruiting purposes is being made, so investigations and surveys, through local committees, guided in their work, should be carried on concerning the capital invested in specific ways, in the extent of such operations and in the degree of business success or failure and in the causes affecting both.

Farming Must be Made Profitable

But when more production has been secured and improved methods of conservation of foods adopted, such as cold storage or desiccation for increasing the relative value in relation to the bulk of food, have been carried out, the regulation of the purchase and sale of products becomes equally essential to the easy and natural evolution of agriculture. In England, at the present moment, owing to the firm hand of government, both the price to be paid the farmer for his products and the price he must pay for his labour have been determined; but, in the United States and Canada, food prices of every kind continue to rise, even though the submarine menace may place a practical embargo on exports. Speaking recently of English agriculture, Sir Rider Haggard said "To my mind, the trouble about agriculture, not only in England but throughout the world, is its comparative unpayability when contrasted with the earning of other industries. If agriculture is to thrive prices must be permanently enhanced and the labourer be better paid." We find this idea being acted upon when Lloyd George's legislation fixed the minimum price of wheat at sixty shillings per quarter and of labourers' wages at a minimum of twenty-five shillings per week.

Farmers Exert Their Influence

If it be said that these methods are simply restrictive of the free expansion of trade, then it can be replied that, to place the men, who control unlimited capital and facilities for its use in cornering food supplies, as in the Chicago market, on the same assumed basis of opportunity as the individual producer is to make a farce of any discussion or attempted solution of the problem. Within two years past the farmers of at least two of the Western States have become dictators, in that they have elected a farmer governor and control both houses of representatives. The manipulators of prices are already setting up loud cries against this invasion of their privileges and prerogatives; but, at any rate, such legislators in their acts will have the virtue of representing the views of the people who elect them.

REQUIREMENTS FOR SUCCESSFUL SOLUTION OF PROBLEMS

If, then, we sum up the whole matter as it appears to us the following essentials would seem to be demanded for a real solution of the problem:

> A scientific report, after careful enquiry of what past experience and present knowledge teach regarding what crops the soil of the different provinces, and even the counties in the same, is best fitted to produce abundantly.

A careful review of past market prices and prospective values of the various possible products in keeping with the demand, as well as the relation of the value of each to the cost after harvesting, transporting and marketing has been provided for.

The securing of loans, either alone or through joint action direct from government, as in Australia, where the savings bank deposits of the post office are loaned at low rates of interest and for long terms, or through other methods, as farmers' banks. Thus, the farmer will be enabled to improve land by drainage, use of fertilizer and improved implements, with a view both to present and future returns, without constant anxiety about repaying capital borrowed.

The co-operation of groups of farmers, through legally organized societies, in obtaining improved breeds of stock and best varieties of seed at best prices to be shipped in carload lots, as well as in pressing for such alterations in freight classification as will remove restrictions from certain classes of production equally detrimental to the railways through the lessening of local freight.

Adoption of modern methods for the pre-cooling and local storage of perishable products, as fruit, eggs, poultry and dairy products, so that sales in car lots can be made and deliveries made when the market is not glutted, directly through their own agent and without the intervention of unnecessary commission men.

The taking control in the matter of selling their own stock in car lots, in prices arranged by their own agent, instead of having the price set for them daily by the buyers of the packing houses on instructions from headquarters. Further, where the cattle interests are large, farmers should encourage cattle markets in the larger city centres, with their associated abattoir, where the local butchers could compete for prices, slaughter their own animals and sell directly to their customers, instead of, as at present, having all stock sent to Montreal, Toronto, Winnipeg or Calgary abattoirs, there to be slaughtered and the meat carried back again to where the animals came from, in express parcels, perhaps at double prices. The farmers must themselves act in conjunction with the cities to throw off this intolerable tyranny, which is degrading agriculture, and must become free to determine for themselves the place and time as well as prices at which they will sell their stock, the latter based upon world-wide rather than on local market prices.

The bringing to the door of the isolated farmers the best experience in the modern science and art of agriculture, through addresses and demonstrations, such as we see going on in many provinces today; and still more by having agriculture so universally taught in local farm schools and in consolidated public schools that the older boys and girls will learn, through actual demonstration and experiment, the science, beauty and dignity of agriculture; while Nature study, from kindergarten up to the higher grades, will be so illustrated by school gardens, winter flower rooms and greenhouses that the facts will be indelibly impressed on the mind of the child as the elements of a science which is absolutely essential to be grasped if the agriculture of the future is to move forward on the same plane of progress as do the railways, shipbuilding, manufactures and a hundred industries made possible through steam and electricity.

To co-ordinate all these activities it will be essential that the homes, schools, churches, libraries and places of entertainment those of the farming community have cultivated in them amenities which modern life everywhere in our urban centres has made both possible and desirable. To this end not only must the farmer himself realize both his possibilities and responsibilities, but the rural clergy, teachers and other leaders must also appreciate at its full value the really national influence which the development of our rural life has upon the character, physical, mental and moral, and on the future of the Canadian people. If such do fully comprehend the situation it will then mean that the elected representatives of the people will come increasingly to understand that there are problems demanding the closest study, the best educated minds and the most patriotic endeavours for their solution. Thus, co-ordinating their energy with those of the people, we shall surely see evolved a wholly new social life, wherein, instead of mistrust, misunderstanding and hostility, too often at present seen in our legislatures between representatives of differing interests, there will be harmony marking all their deliberations; while there will be no country and no city separate from each other, or east or west divisions.

FIELD CROPS—CANADA AND ONTARIO, 1910-1914

Crops	Canada and Ontario	Average for 1910–1914	1910	1914
Wheat (Fall and Spring)...	Canada......	10,494,000 acres	8,863,151	10,293,900
	Ontario......	886,000 "	870,355	834,400
Oats.............	Canada......	9,671,000 "	8,652,015	10,061,500
	Ontario......	2,819,000 "	2,871,288	2,840,000
Barley...........	Canada......	1,501,000 "	1,286,611	1,495,600
	Ontario......	505,000 "	503,129	461,000
Rye..............	Canada......	123,000 "	114,343	111,260
	Ontario......	92,000 "	92,731	78,000
Peas.............	Canada......	283,000 "	355,262	205,550
	Ontario......	249,000 "	321,996	179,000
Beans............	Canada......	50,000 "	46,149	43,830
	Ontario......	43,000 "	40,626	38,000

FIELD CROPS—CANADA AND ONTARIO, 1910-1914—*Continued*

Crops	Canada and Ontario	Average for 1910—1914	1910	1914
Buckwheat........	Canada......	378,000 acres	361,871	354,400
	Ontario......	186,000 "	167,313	176,000
Flax.............	Canada......	1,259,000 "	582,326	1,084,000
	Ontario......	8,400 "	8,780	5,300
Corn (husking).....	Canada......	298,000 "	293,775	256,000
	Ontario......	278,000 "	274,846	239,000
Potatoes..........	Canada......	476,000 "	465,903	475,900
	Ontario......	156,000 "	158,363	154,000
Turnips...........	Canada......	192,000 "	177,423	175,000
	Ontario......	131,000 "	132,529	114,000
Hay and clover....	Canada......	8,336,000 "	8,281,932	7,997,000
	Ontario......	3,328,000 "	3,216,154	3,171,000
Fodder corn.......	Canada......	298,000 "	294,009	317,000
	Ontario......	249,000 "	245,048	267,000
Sugar beets........	Canada......	18,000 "	17,045	12,100
	Ontario......	17,000 "	15,966	12,000
Alfalfa............	Canada......	87,000 "	56,818	90,315
	Ontario......	66,000 "	45,625	61,000

LIVE STOCK—CANADA AND ONTARIO, 1910-1916

		1910	1914	1915	1916
Horses.............	Canada....	2,213,199	2,947,738	2,996,000	2,990,635
	Ontario....	809,949	904,975		
Milch cows*.........	Canada....	2,853,975	2,673,286	2,666,646	2,603,345
	Ontario....	1,243,680	1,083,843		
Other cattle.........	Canada....	4,250,963	3,363,531	3,399,158	3,313,519
	Ontario....	1,629,360	970,445		
Sheep	Canada....	2,598,470	2,058,045	2,038,662	1,968,101
	Ontario....	1,032,227	640,416		
Swine.............	Canada....	2,753,964	3,434,261	3,111,900	2,814,672
	Ontario....	1,481,055	1,555,624		

* Milch cows, 1910, (1,065,763).

FRUIT TREES—CANADA AND ONTARIO, 1901-1911

		1901	1911
Apple trees bearing	Canada	11,025,780	10,617,372
	Ontario	7,551,636	6,710,033
Peach trees bearing	Canada	819,985	839,286
	Ontario	811,725	794,192
Plum trees bearing	Canada	1,452,269	1,075,130
	Ontario	999,091	784,036
Cherry trees bearing	Canada	903,140	741,992
	Ontario	446,556	506,868

CENSUS FIGURES, 1911, GIVING VALUES OF FARM PROPERTY IN CANADA

	All farm property	Land	Buildings	Implements	Live stock
Canada	$4,231,840,636	2,519,777,901	823,951,767	257,007,548	631,103,420
Ontario	1,223,701,549	611,756,794	314,377,168	77,734,449	219,833,138

PERCENTAGE OF ONTARIO VALUES TO TOTAL

	Land	Buildings	Implements	Live stock
Canada—1901	56.36 per cent	22.15 per cent	6.08 per cent	15.41 per cent
1911	59.55 " "	19.47 " "	6.07 " "	14.91 " "
Ontario—1901	30.03 " "	11.82 " "	2.95 " "	7.38 " "
1911	14.45 " "	7.43 " "	1.84 " "	5.19 " "

The value of implements in Saskatchewan in 1911 was 1.36 per cent of the total 6.07, while that of Ontario was only 1.84 and that of Manitoba 0.66, showing not only the great increase of cultivation in Saskatchewan, but also how much more machinery is used there and of an expensive type.

ONTARIO

Total farm land, estimated	58,541,000	acres
" " " occupied	22,171,785	"
Rural population in 1901	1,246,969	"
" " " 1911	1,194,785	"
Occupied land, per person	18.7	"
Total tillable land, per person	50	"
Estimated value per acre in 1911–13, (average of five crops in Ontario over cost of production)	$7.50	

(Fall wheat, spring wheat, oats, barley, flax, average value 16.77)

POPULATION OF ONTARIO COUNTIES NOT AFFECTED BY NEAR-BY CITIES

	1901	1911	Loss	Loss per cent
Huron	61,820	52,983	8,837	17
Wellington (N)	26,120	22,292	3,828	17
Hastings	59,291	55,803	3,488	7
Leeds-Grenville	40,275	35,767	4,508	11

Canada, total rural population in 1911	3,925,502
Ontario, rural population in 1911	1,194,785

SUNDRY STATISTICS, 1914

Total assets of chartered banks, 1914	$1,555,556,815
Total loans " " " "	858,090,078
At credit of depositors in Post Office and Dominion savings banks	55,567,449
Assets of loan companies, 1913	478,658,227
Amount of loans 1913	302,056,422
Net amount of life insurance in Canada in 1914	1,216,955,432
Premium income	41,129,724
Steam railway mileage in 1914	30,795
Capital liability of steam railways in 1914—Stocks (including debenture stocks)	$1,026,418,123
Funded debt	782,402,638
Total liabilities of railways in 1914	$1,808,820,761

Dominion and Provincial Government aid to railways in 1914:

Bonds authorized	$406,259,165
Bonds executed	710,268,624
Guarantees earned	235,473,394

ANALYSIS OF FINANCIAL AID TO RAILWAYS, TO JUNE, 1914

	By Dom. Gov.	By Prov. Gov.	By Municipalities
Cash subsidies	$105,318,205	$29,526,245	$12,670,837
Loans	25,576,533	7,197,030	2,404,499
Paid to Quebec Govt	5,160,054		
Subscriptions to shares		300,000	2,839,500
Value of lines given to C. P. Ry	37,785,320		
Implement Clause of G. T. P. Ry	4,994,417		
	$178,834,529	$37,023,275	$17,914,836

Grand total........................ $233,772,640

Total Dominion and Provincial land grants to railways to 1914	55,740,249	acres
Total aid to railways to 1914, etc. loans	$233,772,640	
Land grants at $10.00 per acre	557,402,490	
	$791,175,130	

Of the total aid granted, in the form of loans, subsidies, etc., $152,509,705 has been paid up.